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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,284	07/11/2003	Peter Brookes	15114H-067600US	4798
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TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			EXAMINER ALHJA, SAIF A	
			ART UNIT 2128	PAPER NUMBER

DATE MAILED: 04/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,284

Applicant(s)

BROOKES ET AL.

Examiner

Saif A. Alhija

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-33 have been presented for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-12, 14-26, 28-33 are rejected** under 35 U.S.C. 102(b) as being clearly anticipated by **Lin et al. "Coverification System and Method", U.S. Patent No. 6,389,379**, hereafter referred to as **Lin**.

Regarding Claim 1:

Lin discloses A method for simulating a system which comprises a software element, and first and second hardware components, the software element being for execution on the second hardware component, and the first and second hardware components being operable to interact with one another, the method comprising the steps of:

simulating operation of the first hardware component in a first simulation; (**Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57**)

and simulating the software element and the second hardware component in a second simulation; (**Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57**)

wherein the first simulation and the second simulation are implemented in separate processing threads. (**Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57**)

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Regarding Claim 2:

Lin discloses A method as claimed in claim 1 wherein the first simulation and the second simulation run asynchronously. **(Column 57, Lines 17-35)**

Regarding Claim 3:

Lin discloses A method as claimed in claim 1, wherein the first simulation and the second simulation are synchronised with a reference clock. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 4:

Lin discloses A method as claimed in claim 1, wherein the first and second simulations run in different respective simulation environments. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 5:

Lin discloses A method as claimed in claim 1, further comprising:

- performing operations in the first simulation to set up an inter-process communications protocol connection therein; **(Column 87, Lines 50-64)**
- connecting the second simulation to the interprocess communications protocol connection in the first simulation; **(Column 87, Lines 50-64)**
- connecting a software debugger to the second simulation; **(Abstract. Column 1, Lines 33-49)**
- and controlling the first simulation from the software debugger via the second simulation using the interprocess communications protocol. **(Abstract. Column 1, Lines 33-49)**

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Regarding Claim 6:

Lin discloses A method as claimed in claim 1, further comprising:
performing operations in the first simulation to set up an inter-process communications protocol connection therein; (**Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64**)
connecting a software debugger to the communications protocol connection; (**Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64**)
and controlling the first simulation from the software debugger using the inter-process communications protocol. (**Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64**)

Regarding Claim 7:

Lin discloses A method as claimed in claim 5 or 6, wherein the inter-process communications protocol is TCP/IP and the connection is a TCP/IP socket. (**Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64**)

Regarding Claim 8:

Lin discloses A method as claimed claim 1, wherein the second hardware component includes a processor. (**Column 11, Line 59 – Column 12 Line 2**)

Regarding Claim 9:

Lin discloses A method as claimed in claim 8, wherein the processor is an embedded processor. (**Column 11, Line 59 – Column 12 Line 2**)

Regarding Claim 10:

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Lin discloses A method as claimed in claim 1, wherein the hardware component includes processor peripheral devices. **(Column 11, Line 59 – Column 12 Line 2)**

Regarding Claim 11:

Lin discloses A method as claimed in claim 10, wherein the peripheral devices are embedded. **(Column 11, Line 59 – Column 12 Line 2)**

Regarding Claim 12:

Lin discloses A method as claimed in claim 1, wherein the first simulation is implemented using a hardware description language (HDL) simulation environment. **(Figure 26)**

Regarding Claim 14:

Lin discloses A method as claimed in claim 1, wherein the first hardware component is a programmable logic device. **(Column 63, Lines 4-10)**

Regarding Claim 15:

Lin discloses A method for controlling a simulation of a system using a software debugger, wherein the system comprises a software element, and first and second hardware components; the software element being for execution on the second hardware component and the first and second hardware components being operable to interact with one another, the method comprising the steps of:

simulating the first hardware component in a first simulation; **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

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and simulating the second hardware component in a second simulation; **(Figures 1, 2, 3, 5, and**

19. Column 27, Lines 45- Column 28, Lines 57)

performing operations in the first simulation to set up an inter-process communications protocol connection; **(Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)**

and controlling the first simulation from the software debugger using the inter-process communications protocol. **(Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)**

Regarding Claim 16:

Lin discloses A method as claimed in claim 15, further comprising the step of:

connecting the software debugger to inter-process communications protocol connection.

(Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)

Regarding Claim 17:

Lin discloses A method as claimed in claim 15, further comprising the steps of:

connecting the second simulation to inter-process communications protocol connection; **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

and connecting the software debugger to the second simulation; **(Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)**

wherein the first simulation is controlled from the software debugger via the second simulation using the inter-process communications protocol. **(Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)**

Regarding Claim 18:

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Lin discloses A method as claimed in claim 15, wherein the inter-process communications protocol is TCP/IP and the connection is a TCP/IP socket. **(Abstract: Column 1, Lines 33-49. Column 87, Lines 50-64)**

Regarding Claim 19:

Lin discloses A method as claimed in claim 15, wherein the step of simulating the second hardware component comprises simulating a processor and one or more peripheral devices with which the one or more processors interact directly. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 20:

Lin discloses A method as claimed in claim 15, wherein the first simulation and the second simulation are implemented in separate processing threads. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 21:

Lin discloses A method as claimed in claim 15, wherein the first simulation and the second simulation run asynchronously. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 22:

Lin discloses A method as claimed in claim 15, wherein the first simulation and the second simulation are synchronised with a reference clock. **(Figures 1, 2, 3, 5, and 19)**

Regarding Claim 23:

Lin discloses A method as claimed in claim 15 wherein the first and second simulations are implemented in respective different simulation environments. **(Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)**

Regarding Claim 24:

Lin discloses A method as claimed in claim 15, wherein the second hardware component includes embedded processors. **(Column 11, Line 59 – Column 12 Line 2)**

Regarding Claim 25:

Lin discloses A method as claimed in claim 15, wherein the second hardware component includes embedded peripheral devices. **(Column 11, Line 59 – Column 12 Line 2)**

Regarding Claim 26:

Lin discloses A method as claimed in claim 15, wherein the first simulation is implemented using a hardware description language (HDL) simulation environment. **(Figure 26)**

Regarding Claim 28:

Lin discloses A method as claimed in claim 15, wherein the first hardware component is a programmable logic device. **(Column 63, Lines 4-10)**

Regarding Claim 29:

Lin discloses A method for providing an I/O interface for a simulation model to allow the simulation of interactive programs, the method comprising:

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simulating an embedded input/output device within the simulation model to produce an input/output device model; (Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)

connecting the input/output device model to a terminal emulator using an inter-process communications protocol; (Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)

and running an interactive program in the terminal emulator. (Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64. Figures 1, 2, 3, 5, and 19)

Regarding Claim 30:

Lin discloses A method as claimed in claim 29, the method further comprising: providing separate processing threads for the embedded input/output device to allow concurrent user inputs and outputs. (Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)

Regarding Claim 31:

Lin discloses A method as claimed in claim 29, wherein the inter-process communications protocol is TCP/IP. (Abstract. Column 1, Lines 33-49. Column 87, Lines 50-64)

Regarding Claim 32:

Lin discloses A method as claimed in claim 29, wherein the input/output device is a UART device. (Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)

Regarding Claim 33:

Lin discloses A method as claimed in claim 29, wherein the input/output device is an Ethernet MAC device. (Figures 1, 2, 3, 5, and 19. Column 27, Lines 45- Column 28, Lines 57)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claim(s) 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Kim et al. "An Integrated Hardware-Software Cosimulation Environment with Automated Interface Generation", hereafter referred to as Kim.**

Regarding Claim 13:

Lin does not explicitly disclose A method as claimed in claim 1, wherein the second simulation is implemented using a C model.

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Kim, however, discloses A method as claimed in claim 1, wherein the second simulation is implemented using a C model. **(Introduction, Paragraph 2)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize C code for the simulation as discussed in **Kim** for the simulation in **Lin** since C is commonly used higher level programming language as disclosed numerous times in **Kim**.

Regarding Claim 27:

Lin does not explicitly discloses A method as claimed in claim 15, wherein the second simulation is implemented using a C model.

Kim, however, discloses A method as claimed in claim 1, wherein the second simulation is implemented using a C model. **(Introduction, Paragraph 2)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize C code for the simulation as discussed in **Kim** for the simulation in **Lin** since C is commonly used higher level programming language as disclosed numerous times in **Kim**.

Conclusion

4. All Claims are rejected.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saif A. Alhija whose telephone number is (571) 272-8635. The examiner can normally be reached on M-F, 11:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAA

March 30, 2006

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